

We claim:

1. A sensor device mountable on a valve stem of an inflatable tire of a vehicle, having an actuating pin adapted to be depressed by a component of a gauge or connecting fixture of a compressed air line coupled to said valve stem, comprising:

a housing defining a closed chamber, having a first threaded opening permitting said housing to be threaded onto said valve stem, and a second opening;

means supported on said housing engageable with said actuating pin of said valve stem for depressing said actuating and thereby opening said valve stem when said housing is threaded onto said valve stem, intercommunicating the interiors of said tire and said housing;

a valve disposed in said second opening having an actuating pin adapted to be depressed by said component of said air gauge or line connecting fixture to provide a passageway through said housing when one said housing is mounted on said valve stem;

means disposed on said housing for sensing the pressure within said chamber;

means connected to said sensing means for receiving and processing signals therefrom corresponding to sensed pressure; and

means coupled with said receiving and processing means for transmitting processed signals corresponding to said sensed pressures.

2. A device according to claim 1 including means for supplying power to said sensing, processing and transmitting means.

3. A device according to claim 2 wherein said power supplying means comprises the electrical system of said vehicle.

4. A device according to claim 2 wherein said power supplying means comprises a battery mounted on said housing.

5. A device according to claim 1 including means disposed on said housing for sensing temperature within said chamber and wherein said processing means is connected to said temperature sensing means for receiving and processing sensed temperatures and said transmitting means is operable to transmit processed signals corresponding to said sensed temperatures.

6. A device according to claim 5 including means disposed on said housing for sensing ambient temperature and wherein said processing means is connected to said ambient temperature sensing means for receiving and processing sensed ambient temperatures and said transmitting means is operable to transmit signals corresponding to said ambient temperatures.

7. A device according to claim 1 wherein said processing means comprises a microcontroller.

8. A device according to claim 1 wherein said transmitting means comprises a transmitter/receiver.

9. A device according to claim 1 wherein said housing includes a recess for receiving said tire stem therein, said first opening is disposed at an inner end of said recess, and a wall defining said recess includes a set of threads which may be threaded onto said valve stem.

10. A device according to claim 1 wherein said housing is formed of a dielectric material.

11. A device according to claim 1 wherein said housing is formed of a molded plastic material.

12. A device according to claim 1 including a seal mounted on said housing about said first opening engageable in sealing relation with said valve stem when said device is mounted on said valve stem.

13. A device according to claim 1 wherein said valve disposed in said second opening includes a valve seat, a valve head connected to said pin thereof and engageable with said valve seat and a spring biasing said valve head into engagement with said valve seat.

14. A device according to claim 1 wherein the sensor device further includes a dust prevention mechanism disposed within a third opening located adjacent the second opening, said mechanism comprising:

a ball member disposed within the third opening closing the passage between the second opening and an exterior of the housing in a closing position; and

a biasing means for biasing the ball member in said closing position.

15. A device according to claim 1, wherein the housing adjacent to the second opening is provided with a dust prevention mechanism.

16. A device according to claim 15, wherein said dust prevention mechanism comprises:

a cap threaded attached to said housing having a chamber therein providing a passage from the valve in the second opening to an exterior of the housing; and

a ball member disposed in the chamber for closing the passage,

wherein the ball member is biased into a closing position by a biasing means.

17. A device according to claim 16 wherein the biasing means is a spring.

18. A system for monitoring certain conditions of at least one inflatable tire of a vehicle, having a valve stem provided with an actuating pin adapted to be depressed by a component of an air gauge or a connecting fixture of a compressed air line coupled to said valve stem, comprising:

a sensor device including:

a housing defining a closed chamber, having a first threaded opening permitting said housing to be threaded onto said valve stem, and a second opening:

abutment means disposed in said housing engageable with said actuating pin of said valve stem for depressing said actuating pin and thereby opening said valve stem when said housing is threaded onto said valve stem, intercommunicating the interiors of said tire and said housing;

a valve disposed in said second opening having an actuating pin adapted to be depressed by said component of said air gauge or compressed air line connecting fixture to provide a passageway through said housing;

means disposed on said housing for sensing the pressure within said housing;

means connected to said sensing means for receiving and processing signals therefrom corresponding to sensed pressure; and

means coupled to said receiving and processing means for transmitting signals corresponding to said sensed pressures; and

a control unit detached from said sensor device including means for transmitting and receiving signals to and from said sensor device, means for processing said signals and means for displaying data corresponding to processed signals.

19. A system according to claim 18 wherein said control unit is operable to query said sensor device and said sensor device is operable to respond thereto.

20. A system according to claim 18 wherein said control unit is operable to transmit signals for activating and deactivating said sensor device.

21. A system according to claim 19 wherein said control means is operable to query and thus identify a plurality of sensor devices.

22. A system according to claim 18 wherein said control unit includes a microcontroller, a bi-directional radio transceiver, an alpha-numeric display module, physical status indicators and a data keypad.
23. A system according to claim 18 including at least two of said sensor devices.
24. A system according to claim 18 wherein said sensor device includes means for supplying power to said sensing, processing and transmitting means.
25. A system according to claim 24 wherein said sensor device includes means for supplying power to said sensing, processing and transmitting means.
26. A system according to claim 24 wherein said power supply means of said sensor device comprises a battery mounted on said housing.
27. A system according to claim 18 wherein said sensor device includes means disposed on said housing thereof for sensing temperature within said chamber, and wherein said processing means of said sensor device is connected to said temperature sensing means for receiving and processing sensed temperatures and said transmitting means of said sensor device is operable to transmit processed signals corresponding to said sensed temperatures to said control unit.
28. A system according to claim 27 wherein said sensor device includes means disposed on said housing for sensing ambient temperature and wherein said processing means of said sensor device is connected to said ambient temperature sensing means for receiving and processing ambient temperatures and said transmitting means of said sensor device is operable to transmit processed signals corresponding to said ambient temperatures to said control unit.
29. A system according to claim 18 wherein said processing means of said sensor device comprises a microcontroller.

30. A system according to claim 18 wherein said transmitter means of said sensor device comprises a transmitter/receiver.

31. A system according to claim 18 wherein said housing of said sensor device includes a recess for receiving said tire stem therein, said first opening of said housing is disposed at an inner end of said recess and a wall of said housing defining said recess includes a set of threads which may be threaded onto said valve stem.